

Approval and Communication of Refinery, Maintenance, or Engineering Instructions

Document No.: RI-371	Title: Near Loss, Event Reporting, and Incident Investigation	Current Date: 11/2011
Action: <input type="checkbox"/> New <input checked="" type="checkbox"/> Revision <input type="checkbox"/> Cancellation		Next Revision Due: 02/2014
Responsible Organization: HES - Safety Section		Position to Contact With Questions/Suggestions: HES PSM/Safety Specialist
Summarize Rewritten Material: Since this is a "minor" review, the "Next Revision Due" date remains 02/2014. Previous Appendix I was replaced with a link and references to Global Manufacturing LI/NLI Classification and Reporting matrices. Removed Appendix VI (IPS Status and Incident Quality Requirements). Renumbered remaining Appendices. Removed specific references to IPS and IF Reports. Added Chairman's Serious Incident Review process (Section 4.7) and linked to document.		
Review: Minor <input checked="" type="checkbox"/> Complete <input type="checkbox"/>		

REQUIRED COMMUNICATION/TRAINING

If Type 2 or Type 3 training is necessary – Instruction Owner is responsible for developing the training material and must work with Development Department Manager and Managers of affected personnel to coordinate training of affected personnel and documentation of training.

This document should be reviewed by:	Type 1 Simple Change	Type 2 On-The-Job Training	Type 3 Classroom Training
All Refinery Personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance & Reliability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Necessary Approval for Instructions:

- Refinery Instructions:
- Safe Work Practices:
- Emergency Plans (400 Series RIs):
- Engineering Instructions:
- Maintenance Instructions:
- Cancellation of Instruction:

Standard RI approvals have been check marked

Development, Operations, Maintenance & Reliability, HES, and Refinery Manager
 Development, Operations, Maintenance & Reliability, HES, and Refinery Manager
 Technical and HES Manager
 Maintenance & Reliability and HES Manager
 Owner and Refinery or Appropriate Dept. Manager

APPROVALS

<input checked="" type="checkbox"/>	Instruction Owner: Mike Baer	<input type="checkbox"/>	Development Manager: <i>(first signature before final routing)</i>
<input type="checkbox"/>	Operations Manager:	<input type="checkbox"/>	Technical Services Manager:
<input checked="" type="checkbox"/>	HES Manager: Dave Feiglstock	<input type="checkbox"/>	Maintenance & Reliability Manager:
<input type="checkbox"/>	Refinery Manager: <i>(final signature)</i>	<input type="checkbox"/>	Other Manager:

On Completion – Instruction Owner will send file and message to IPC to post on the Refinery server.

RICHMOND REFINERY INSTRUCTIONS

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1.0 PURPOSE

Incident Investigation and Reporting is one of several Process Safety Management systems designed to prevent the occurrence of and/or minimizing the consequences of events that have, or could have a detrimental effect on the safety of workers, impact to community, and operation of the Richmond Refinery. The basic purpose for reporting and investigating losses and near losses is to prevent the recurrence of such events and promote a safer and loss-free work environment.

This Refinery Instruction describes the Richmond Refinery Loss/Near Loss Reporting and Investigation policy that meets the Refinery's business needs and complies with the various regulations for incident investigation. This document also conforms to Global Manufacturing Incident Reporting and Investigation standardized Operational Excellence (OE) expectations.

2.0 SCOPE

This Instruction covers:

- Loss and Near Loss reporting requirements
- Loss and Near Loss incident classification
- Loss and Near Loss investigation requirements

Loss investigation is the systematic investigation of any unplanned event that results in personal injury, environmental damage, financial costs/economic loss, breach of law, or damage to Chevron's reputation or property or other economic loss. Losses, regardless of their actual or potential severity, are also referred to as incidents in this document. Some incidents are required to be investigated by law. Losses may include (but are not limited to) the following:

- Physical injuries
- Equipment damage
- Unplanned repairs and maintenance
- Spills or leaks
- Fire
- Environmental damage
- Breaches of compliance and/or regulatory assessments
- All financial losses

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- Security events (may be investigated by Security personnel who are not required to follow this Refinery Instruction)
- Damage to Chevron's reputation
- Any other unplanned event that adversely affects Chevron's business or operations
- Any other Incident required to be investigated by law

A Near Loss (also known as a Near Miss) is an event which, under slightly different circumstances or if left unmanaged, could have resulted in a loss as defined above. Near Losses are not regarded as incidents, but are classified and investigated in the same way as actual losses. Near Losses include all unsafe working conditions and unsafe behaviors.

2.1 Intended Audience for this Refinery Instruction

This Refinery Instruction applies to all Chevron employees at Richmond Refinery and to the activities of all Contractors working under Chevron Richmond Refinery operational control.

2.2 Use of this Refinery Instruction

1. This Refinery Instruction is the policy document for Incident Investigation and Reporting and establishes the framework for this process,
- *2. The Manufacturing Loss/Near Loss Classification and Reporting Matrices define the events that fall under this Refinery Instruction. This document also covers the requirements for reporting the consequences of these events and investigating them to identify their basic/root causes.
- *3. Appendix I and Appendix II describe the work process for reporting an event (a loss or near loss) and investigating it.
- *4. Appendix III provides guidelines for selecting the appropriate investigation methodology.
- *5. Appendix IV provides information regarding the regulatory requirements under the California Code of Regulations and the Richmond Industrial Safety Ordinance.
- *6. Appendix V has a flow chart for U.S. Environmental Protection Agency (EPA) New Source Review (NSR) Consent Decree flaring investigations.

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3.0 LEGAL REQUIREMENTS OR CODES

- *3.1 The primary regulation governing the contents of this Refinery Instruction is the California Code of Regulation - Title 8 Safety Orders - Section 5189, Process Safety Management of Acutely Hazardous Materials. The subsection of the regulation that applies to Event Reporting and Incident Investigation is documented in Appendix IV and applies specifically to those incidents that did, or could reasonably have resulted in a catastrophic release of a highly hazardous material (PSM Incident). Following the OSHA PSM requirements also fulfills the requirements of the California Accidental Release Prevention (Cal/ARP) Program. The definition of a PSM event is included in the Manufacturing Loss/Near Loss Classification and Reporting Matrices and the MCAR investigation requirements are included in Appendix IV.
- *3.2 Additional requirements within this instruction address the Richmond Industrial Safety Ordinance (RISO) 42-01. The ordinance states that Major Chemical Accidents or Releases (MCAR) and incidents that had the potential to result in an MCAR event must be reported, investigated, and completed to meet specific City of Richmond and Contra Costa Health Services (CCHS) expectations. The definition of an MCAR event is included in the Manufacturing Loss/Near Loss Classification and Reporting Matrices and the MCAR investigation requirements are included in Section 5.0 and Appendix IV.
- *3.3 A Consent Decree with the EPA requires specific investigations of certain flaring events (see Appendix V).

4.0 RESPONSIBILITIES

- 4.1 The Refinery Incident Investigation Coordinator (or his/her designee) is responsible for:
 - *1. Assisting the Functional Work Group Manager (or his/her designee) in determining which investigation methodology is most appropriate per the Manufacturing Loss/Near Loss Classification and Reporting Matrices and Appendix III.
 - 2. Appropriately communicating with Refinery Management of losses or near losses involving Refinery Work Groups and other organizations within Chevron where the event is entered into the incident database under a non-Refinery entity (e.g., Global Lubricants, Global Supply & Trading, Transportation)

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3. Maintaining a report template for TapRoot® investigations that meets OSHA PSM and RISO reporting requirements and making this template available to all qualified TapRoot® investigators
 4. Assisting the PSM Coordinator and Functional Work Group Manager (or his/her designee) determine the affected personnel whose job tasks are relevant to OSHA PSM or MCAR incident findings or whose work assignments are directly involved with the process(es) in question, including contract employees where applicable, to ensure the investigation report is distributed and/or reviewed with them.
- 4.2 The Functional Work Group Manager (or his/her designee) is responsible for:
1. Ensuring there is an incident report that meets the requirements of this Refinery Instruction and the Loss Prevention System (LPS) work process
 - *2. Determining which investigation methodology is most appropriate per Manufacturing Loss/Near Loss Classification and Reporting Matrices and Appendix III, in consultation with the Incident Investigation Coordinator
 3. Reviewing and approving all proposed Level 2 and Level 3 investigations and corrective actions resulting from those investigations

Review and approval of Level 3 investigations cannot be delegated down from the Functional Work Group Manager
 - *4. Ensuring their work group documents, reports, investigates, and archives loss /near loss reports in a manner that meets the requirements identified in this policy.
 5. Working with the PSM Coordinator and Incident Investigation Coordinator to determine the affected personnel whose job tasks are relevant to OSHA PSM or MCAR incident findings or whose work assignments are directly involved with the process(es) in question, including contract employees where applicable, to ensure the investigation report is distributed and/or reviewed with them.
 6. Ensuring the Incident Investigation Coordinator is notified of cases involving a Refinery Work Group and other organizations within Chevron and where the event will be entered into the incident database under a non-Refinery entity (e.g., Global Lubricants, Global Supply & Trading, Transportation).

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- 4.3 The Functional Work Group Manager that manages the plant and/or organization (people) that initiated the event is the overall owner of a loss or near loss investigation. The determination of the owner for most events will be fairly straightforward. However, there will be times when event ownership is not clear. In particular, events that involve many plants and/or many organizations could have this problem. To handle these situations, the functional work group manager (or designees) from the areas involved will decide who will be the owner of the event.
- 4.4 The Second Level Supervisor is responsible for:
1. Serving as the designee for the Functional Work Group Manager (as appropriate)
 2. Reviewing and approving all proposed Level 1 investigations and corrective actions resulting from those investigations
- 4.5 Shift Team Leaders and other First Line Supervisors are responsible for ensuring the following take place before the end of the shift in which the loss or near loss took place:
1. All appropriate notifications are made (ABU or Departmental management and the Refinery Shift Leader).
 - *2. An incident report is placed in the Refinery Incident database.
 3. Initial fact gathering begins; including collecting written witness statements and the preservation of any applicable records (e.g., computer data, permits, etc.) as applicable.
 4. The appropriate supervisor is to begin this task before leaving work from his/her shift regardless of the investigation requirement the event will satisfy. If this task cannot be finished, the supervisor will prepare a turnover listing the activities that must be continued. The supervisor's relief will then continue the task of gathering information into the next shift.
 5. Completing GO-42 and GO-414 injury forms (where necessary).
- 4.6 All Chevron employees and all Contractors working under Chevron Richmond Refinery operational control are responsible for reporting all losses and near losses.

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1. Each employee will have the ability to report near losses anonymously, either by phone call or written/electronic notification.
- 4.7 The Management Sponsor for a loss or near loss is a Chevron Manager or Supervisor with the responsibility for:
 1. Coordinating the documentation of event consequences, including entering them into the Refinery Incident data base
 2. Coordinating the overall investigation of the event
 3. Compiling the final incident investigation for the event, including entering the cause analysis and corrective actions in the Refinery Incident database and agreeing corrective actions with the proposed corrective action owner
 4. Addressing and resolving all corrective actions to determine when the investigation is complete
 5. Assignment of investigation to a qualified TapRooT® facilitator for PSM, RISO, or NSR Consent Decree incidents
 6. Assisting in the timely completion of investigations
 - *7. Ensuring the Chairman's Serious Incident Review process is followed for fatalities and process safety incidents that meet the Chairman's Serious Incident Review process criteria.

NOTE: For TOP investigations, see Appendix I (process flow chart) and Appendix II (flow chart process description).

***5.0 PSM & MCAR INCIDENT INVESTIGATION REQUIREMENTS**

The RISO and Cal/OSHA PSM regulation requires that all events that resulted in, or could reasonably have resulted in, a serious injury or catastrophic release be investigated by a team. The final determination of how an event will be investigated is made by the functional work group manager (or designee). If the investigation decision is different than that specified in the Loss/Near Loss Classification and Reporting Matrices, the reason must be documented with the decision, approved by the functional group manager (or designees), and filed with the investigation report.

See the Loss/Near Loss Classification and Reporting Matrices for assistance in determining if an event should be classified as a PSM or MCAR incident or near loss and the appropriate investigation requirements. The USW shall be notified of all PSM and RISO investigations.

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OSHA PSM and MCAR incident investigations must begin within 48 hours. The Refinery has interpreted this as once the plant or process has been stabilized, shutdown, or returned to a normal operating condition, the 48-hour clock begins. At this point, evidence gathering shall be initiated, investigation and primary participants shall be identified, and a plan to formally meet on the next business day established. Ideally, the Refinery will begin investigations sooner if practical.

For MCAR/PSM losses and near losses, persons directly involved with the incident should not be on the investigation team. However, these people (including contractors, if applicable) must be sought out to provide input into the development of the sequence of events and the root/basic cause analysis.

It is the intent of the OSHA PSM requirements that all report recommendations be "promptly addressed" and that final resolution for each recommendation be documented whether implemented or not. Addressing recommendations requires they be listed and prioritized. Resolving a recommendation is deciding whether the recommendation will be implemented as defined, rejected with documented justification, or an alternate solution will be implemented.

The intent of the OSHA PSM requirements is to ensure any recommendations are included in the next Process Hazard Analysis revalidation (For additional requirements, refer to RI-363).

5.1 Corrective Actions Completion Priority Guidelines for PSM & RISO Incidents

In accordance with Cal OSHA - Title 8 requirements and as defined in Section 1.1.6, investigation findings and recommendations shall be promptly addressed and resolved in a timely manner. The functional work group manager (or designee) will make the final determination of the appropriate time frame for implementation of investigation findings and recommendations. Corrective Actions should be completed within one (1) year, unless a plant shutdown is required for completion. Corrective actions shall not be documented as complete unless the change has been fully implemented or completed in the field.

1. Declining a Corrective Action

An incident's Management Sponsor may justifiably decline Corrective Action recommendations if they are documented to justify one or more of the following:

- a. The analysis upon which the recommendation is based contains material factual errors.

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- b. The recommendation is not necessary to protect the health and safety of the employer's own employees or the employees of contractors.
- c. An alternative measure would provide a sufficient level of protection.
- d. The recommendation is infeasible.

5.2 Distribution and Employee Notification Requirements for Investigation Reports

For PSM or RISO (e.g. MCAR) incidents, the functional work group manager and Refinery II&R / PSM Coordinator will determine the affected personnel whose job tasks are relevant to the incident findings or whose work assignments are directly involved with the process(es) in question, including contract employees where applicable to ensure the investigation report is distributed and/or reviewed with them.

It is not required that each affected employee receive a separate copy of the entire investigation report. It does require the applicable findings be reviewed with all affected personnel whose job tasks are relevant to the incident findings or whose work assignments are directly involved with the process(es) in question, including contract employees where applicable.

6.0 EVENTS WITH POTENTIAL LEGAL LIABILITY

Investigation of events which may result in litigation must be conducted under the direction of an attorney and will be confidential under the Attorney/Client Privilege and Attorney Work Product Doctrines. All investigation team members will follow the guidance of the attorney on the distribution of any information collected or developed during the investigation.

The investigation team members must be notified when an investigation is being conducted under Attorney/Client Privilege. The leadership of any union representing an investigation team member must be notified when the investigation is being conducted under Attorney/Client Privilege.

***6.1 Events Likely to Result in Potential Legal Liability**

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The Manufacturing Loss/Near Loss Classification and Reporting Matrices defining the event reporting and incident investigation requirements can be used as a guide. Level 2 or Level 3 Incidents in the accidents, fires, environmental, or off-test products categories are potential candidates for investigations performed under the guidance of Legal Counsel.

6.2 Establishing Attorney/Client Privilege

The Global Manufacturing Law Dept. should be notified by the functional work group manager immediately after the incident occurs, or as soon as it is known to be an incident with consequences as described in the previous paragraph. Legal Counsel will then instruct the Refinery Manager (or designated party) to form a team to investigate the incident. This will establish the Attorney/Client Privilege and the team's investigation will be protected from disclosure to parties that sue the Company. The team's report of its investigation will be submitted to Counsel. The team's working papers may be held under Attorney/Client Privilege indefinitely. Drafts and reports should be designated as Attorney/Client Privileged in accordance with instructions from Counsel.

6.3 Distribution and Employee Notification Requirements for the Investigation Report for Investigations Conducted Under Attorney/Client Privilege

Distributions and review of investigations conducted under Attorney/Client Privilege must be done according to the following protocol:

1. Determine from Counsel when all or part of the investigation report can be released for internal review as required by OSHA regulation.
2. When approval has been received, business unit management will meet with legal counsel and determine if and how the distribution requirements will be modified in order to maintain the Attorney/Client Privilege.
3. All requests for investigation reports to outside agencies must be cleared with Counsel before a copy can be sent to the requesting agency.

7.0 EVENT AND INVESTIGATION DOCUMENT FILING REQUIREMENTS

The local business unit or functional work group is responsible for ensuring the endorsed report, along with pertinent material collected in the process of investigating the event, are collected and filed appropriately.

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7.1 OSHA PSM & RISO Investigations

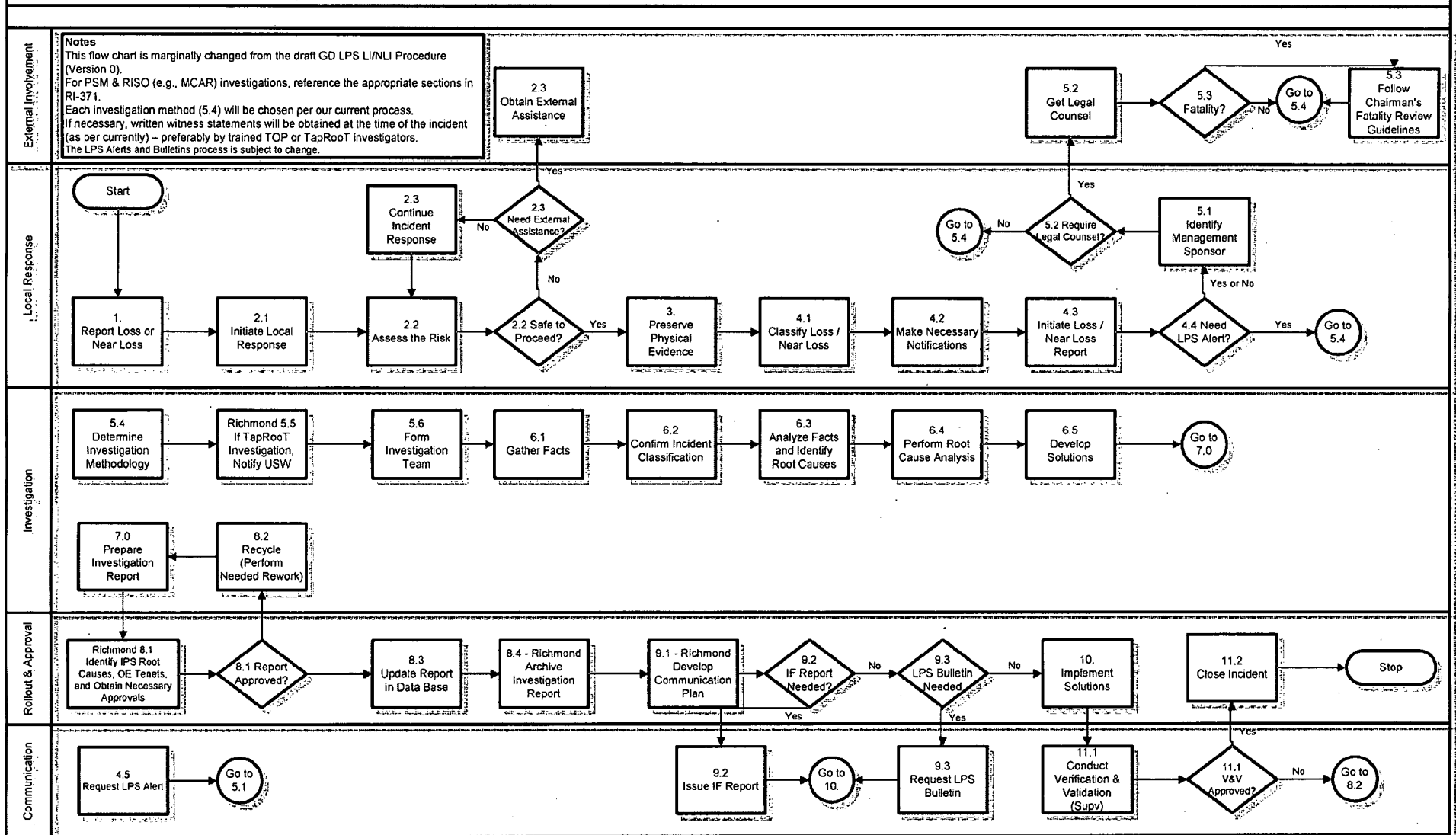
1. The contents of the file for all PSM & RISO events shall be maintained by the Area/ABU and contents should include, but is not limited to, the following:
 - a. A copy of the event report.
 - b. A copy of any other forms required to document the event, such as GO forms and agency reporting documents.
2. A file may also include, but is not limited to, the following:
 - a. A copy of the report summarizing the findings of the investigation. The TapRooT® report template includes the information required for PSM and RSIO event documentation.
 - b. A copy of any other documents required per the investigation method.
 - c. Any supporting evidence and data collected in the process of performing the investigation. This may include strip charts, alarm summary reports, multimedia, results of samples and tests, taped or hand-written eyewitness accounts, copies of procedures/instructions, etc.
 - d. For incidents with cost criteria, documentation of calculation used to estimate economic loss.
 - e. Copies of any documents to confirm that recommendations have been resolved and the investigation has been completed (MOCs, Work Orders, etc.).

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APPENDIX I NEAR LOSS, EVENT REPORTING, AND INCIDENT INVESTIGATION

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Richmond Refinery: Loss Investigation / Near Loss Investigation Process Flow



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PROCESS FLOW CHART SUPPLEMENTARY DESCRIPTION

Loss Investigation is the systematic investigation of any unplanned event that results in personal injury, environmental damage, equipment damage, financial costs or other economic loss, breach of law, or damage to Chevron's reputation. Near losses are events that did not result in a loss, but which had the clear potential for loss; they include all unsafe working conditions and unsafe behaviors. Near losses are classified and investigated in the same way as losses.

1.0 REPORT A LOSS OR NEAR LOSS

If a loss or near loss has been identified, the person who identified the loss or near loss is responsible for documenting and submitting the loss or near loss information.

*Near losses can be submitted directly into the incident database, verbally to a supervisor, or anonymously through the Triangle of Prevention (TOP) program. If a near loss is communicated verbally to a supervisor, the supervisor is responsible for ensuring the near loss information is submitted into the incident database.

2.0 LOCAL RESPONSE

2.1 Initiate Local Response

When a loss or near loss has been reported, the responsible supervisor (or designate – e.g., Head Operator) takes the necessary steps to prevent the event from escalating to a more serious situation. The necessary steps will vary according to the event type. In some cases, external assistance may be necessary to contain the incident and prevent further escalation.

NOTE: If an injury has occurred, obtain immediate medical attention regardless of the injury severity.

2.2 Assess the Risk

Following the report of a loss or near loss, the responsible supervisor (or designate) is responsible for deciding if conditions permit the resumption of work in the area or on the equipment involved. If the incident concerns permitted work (e.g., confined space entry, hot work, etc.), then the permit approvers are responsible for deciding if conditions allow work to resume. For minor incidents, the supervisor may have the person involved make the determination if it is safe to resume using the LPSA tool. In no case, should work resume before it has been approved.

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2.3 Continue Incident Response

If the risk assessment (step 2.2 above) determines that current conditions do not allow for operations to resume, then incident response measure must continue until it has been determined that identified risks have been eliminated or reduced to an acceptable level.

3.0 PRESERVE PHYSICAL EVIDENCE

When it is safe or appropriate to do so, the responsible supervisor shall ensure physical evidence that may be relevant is gathered and preserved. This may include:

- Securing the area
- Preserving records - inspections, permits, lab tests, computer information, etc.
- Taking photographs
- Obtaining initial written witness statements – this is best done by a trained TOP or TapRoot investigator

4.0 CLASSIFY EVENT AND MAKE NOTIFICATIONS

This step is to establish the necessary initial reporting and investigation requirements. Classify losses and near losses according to their reasonable potential consequences.

4.1 Classify Loss/Near Loss

The responsible supervisor makes an initial classification of the event (1, 2, 3a, or 3b) using the Global Manufacturing Loss/Near Loss Classification and Reporting Matrices according to the known facts. The Incident Investigation Coordinator can provide assistance to the Management Sponsor with finalizing the loss or near loss classification.

4.2 Make Necessary Notifications

Based on the initial classification of the event, the responsible supervisor initiates the communications required according to the Global Manufacturing Loss/Near Loss Classification and Reporting Matrices. If there is an actual loss, the supervisor ensures any/all notifications are made as required by law. The Refinery Shift Leader shall provide assistance to ensure all necessary notifications and communications are made and documented appropriately.

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***4.3 Initiate Loss/Near Loss Report in incident database**

The responsible supervisor ensures an initial Loss/Near Loss report is created in the incident database with all required information.

***4.4 Request LPS Alert (if appropriate)**

The responsible supervisor shall request an LPS Alert by checking the box in the incident database for:

- Any Level 3 loss
- Any loss or near loss with a reasonable potential outcome of Level 3
- A loss or near loss where, in the judgment of the supervisor, other personnel or facilities may be vulnerable to the same threat or condition

*All requests for an LPS Alert will be evaluated, approved, and issued using the LPS Alerts & Bulletins process.

5.0 INITIATE INVESTIGATION

5.1 Identify Management Sponsor

Each organization within the Refinery is responsible for having personnel designated to act as Management Sponsors (incident owners) for loss and near loss investigations. The general organizational level of the Management Sponsor will vary according to the event classification (see Loss/Near Loss Classification Matrix). For Operations (to ensure consistency and to facilitate the process within the constraints of the rotating shift schedule), this will generally be the Operations Assistant – this organizational level may be increased for Level 3 incidents.

5.2 Legal Counsel Requirements

Certain incident types require obtaining legal counsel; in other cases, obtaining legal counsel is at the discretion of the Management Sponsor. The HES Manager (or their delegate) can provide assistance as to when obtaining legal counsel may be necessary for HES events.

The Management Sponsor should consider providing Company legal counsel with all relevant information when:

- The business is required by law to notify a regulatory agency concerning the loss.

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- A regulatory authority issues a formal notice to take action as a result of the loss.
- Actual consequences of a loss are at, or likely to become, Level 3.
- The loss may result in a legal claim or controversy.

For Level 1 and Level 2 incidents, the Management Sponsor should obtain legal counsel when there is a risk of civil or criminal liability, or other negative consequences to the business as a result of the loss.

5.3 Fatality Requirements

If the incident resulted in a fatality, Refinery management is responsible for following the steps and timing in the Chairman's Fatality Review Procedure.

5.4 Determine Investigation Methodology

After reviewing the initial loss or near loss report, the functional work group manager (or their designee), in consultation with the Incident Investigation Coordinator, will determine which investigation method is most appropriate per the Global Manufacturing Loss/Near Loss Classification and Reporting Matrices and Appendix III of this instruction.

Once an investigation method has been chosen, the loss or near loss will be investigated according to the needs and procedures of that investigation method.

Guidelines for estimating the reasonable potential consequences of an event and guidelines for selecting TOP, 5-Why, or TapRooT® can be found in Appendix III.

For OSHA PSM and RISO (e.g., MCAR) investigation requirements, see RI-371, Section 5.0.

5.5 Notify USW of TapRooT® Investigations

Per the PSM Letter of Agreement between the Company and the United Steel Workers (USW), there is an obligation to inform the USW of each PSM-related TapRooT® investigation so they can appoint a USW representative to those investigations. In general, it has also been advantageous to solicit USW participation in other TapRooT® investigations as well.

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5.6 Form Investigation Team

Each investigation team will be formed according to the investigation method used.

For TapRooT® and 5-Why investigations, the investigation team operates under the authority of the Management Sponsor who has overall accountability for the loss or near loss investigation. The investigation team leader or facilitator (Level 3 TapRooT® investigations) is responsible for leading the work of the investigation team. Investigation team members will include personnel with first-hand knowledge of the equipment and/or procedures that were involved in the event under investigation.

For TOP investigations, the TOP Representative will form the investigation team after consulting with the investigator and their supervisor (as necessary) to ensure the investigator's availability. The TOP Representative will also be responsible for providing assistance and counseling in the TOP process to the investigation team members.

6.0 CONDUCT INVESTIGATION

6.1 Gather Facts

The first step in gathering facts was Step 3 (see above) – Preserve Physical Evidence. Subsequent fact gathering begins with a review of the initial evidence and continues until all relevant information has been collected and all personnel who have information concerning the incident have been interviewed.

NOTE: Thorough fact gathering is essential to a successful investigation. While every effort should be made to gather all relevant facts at the start of an investigation, additional facts and avenues for inquiry may surface during an investigation. These new facts need to be reviewed and analyzed as the investigation progresses until all necessary information has been gathered.

6.2 Confirm Incident Classification

Following fact gathering, the investigation team reviews and confirms (or modifies) the initial classification of the loss or near loss. For TOP investigations, this may not formally take place until the investigation rollout.

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NOTE: The true cost of a loss may not be known for some time after the loss. The data in the COI database should be regarded as the authoritative data in this regard.

6.3 Analyze Facts and Identify Root Causes

The investigation team determines the root cause(s) of the incident based on a thorough analysis of all the facts. The team's conclusion shall include a detailed description of the root cause(s) and other contributing factors which are seen to have contributed to the loss or near loss.

6.4 Perform Root Cause Analysis

The investigation team performs a root cause analysis to categorize each identified root cause and contributing factor. Each investigation shall proceed according to the investigation method used – TapRooT® investigations shall use the TapRooT® Root Cause Tree®, TOP investigations shall use the TOP Systems of Safety, 5-Why investigations shall use the Standard Root Cause and Category List in IPS.

6.5 Develop Solutions

The investigation team is responsible for developing an appropriate solution for each root cause or contributing factor identified during the investigation. Solutions are expected to meet Specific, Measurable, Actionable, Relevant, and Timely (SMART) criteria. The investigation team is responsible for reviewing proposed solutions with the solution owner to ensure they agree to the solution and can commit to implementation by the proposed due date.

7.0 PREPARE INVESTIGATION REPORT

The Investigation Team Leader prepares the investigation report with the support of the other investigation team members. This includes entering information into the required fields for the Loss/Near Loss Report in the IPS database. For 5-Why investigations, no additional written report is required (though it is recommended). For investigations using TOP or TapRooT®, a separate written report is required.

8.0 ROLLOUT AND APPROVAL

The completed investigation report is reviewed and approved by the Management Sponsor and/or the Approver designated by the work group. For example, Operations may decide that the Section Head is responsible to review and approve all Level 1

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investigations and Level 2 investigations as designated by the Area Business Manager. In this case, the Area Business Manager will review all Level 3 investigations and Level 2 investigations (unless designated to the Section Head).

8.1 Identify OE Tenets and Obtain Necessary Approvals

- *1. Each investigation shall identify which (if any) OE Tenets were violated. TapRooT® and 5-Why investigations can do this in the course as part of developing their investigation reports and entering the necessary information into the incident database. For TOP investigations, the Management Sponsor shall work with the Investigation Team at the report rollout to determine the applicable root causes & OE Tenets, and shall enter the information into the incident database before closing out the investigation.
2. The Management Sponsor shall review the report and evaluate the quality of:
 - Comprehensiveness and accuracy of information
 - Appropriateness of conclusions
 - Accuracy of Root Cause Analysis
 - Adequacy of solutions and their match with the root cause
 - Identification of personnel responsible for implementing solutions
 - Agreed solution due dates
3. The Management Sponsor may ask additional reviewers to assist in the review of the completed investigation report – typically subject matter experts with specialized knowledge bearing on the incident under review.

8.2 Recycling

The Management Sponsor or other Reviewer shall either approve the investigation report or send it back to the investigation team with specific requests as to which parts of the report need additional work (and why).

*8.3 Update Report in Incident Database

Following approval of the investigation report, the Management Sponsor is responsible for ensuring the incident report information is updated in the incident database.

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8.4 Archive Investigation Report

The TapRooT® Team Leader or TOP Representative shall file the completed TapRooT® or TOP investigation report. For OSHA PSM and RISO (e.g., MCAR) investigation requirements, see RI-371, Section 7.0.

9.0 COMMUNICATION

The investigation team leader (or Management Sponsor in the case of TOP investigations) initiates additional Loss or Near Loss communications as appropriate (see below).

9.1 Develop a Communication Plan

Develop a Communication Plan for all Level 2 and Level 3 incidents to ensure lessons learned are communicated to all affected personnel. Consider if this incident requires sharing the lessons learned outside the particular work group or the Refinery.

***9.2 Issue LPS Bulletin (as needed)**

Request an LPS Bulletin per the LPS Alerts & Bulletins process using the check box in the incident database.

LPS Bulletins are for situations where there is potential for significant loss or near loss at other locations or in other work groups. The incident database contains guidelines for when to request an LPS Bulletin. LPS Bulletins are required for all Level 3 incidents.

10.0 IMPLEMENT SOLUTIONS

The Management Sponsor or responsible supervisor ensures the agreed solutions are implemented – either directly (for changes in areas under their supervision) or by working with the responsible supervisors in other work groups or departments.

The Management Sponsor is accountable for ensuring each of the agreed solutions is implemented by the agreed due date. For OSHA PSM and RISO (e.g., MCAR) investigation requirements, see RI-371, Section 5.1.

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11.0 VERIFICATION AND VALIDATION

11.1 Supervisor Verification and Validation

The responsible supervisor verifies the agreed solutions have been implemented as planned and validates they have been effective in resolving the identified risk(s). Verification and validation are performed *in the workplace* and are generally done at the same time.

Verification involves reviewing the corrective actions taken, observing the new or modified equipment, work procedures, or appropriate behaviors, and establishing that the approved solutions have been implemented and are being followed.

Validation involves observing the modified work conditions or performance and discussing the results with the affected personnel. The goal is to discover if the implemented solutions have been effective in eliminating the identified risk or reducing it to an acceptable level

- Solutions affecting working conditions are usually verified and validated immediately after the scheduled (or actual) completion date.
- Solutions affecting the activities of personnel are verified and validated over a period of time to ensure the new procedures or work routines are maintained over time.

After verifying and validating the agreed solutions, the responsible supervisor approves the incident report and updates it in the incident database. If the implemented solutions have not effectively eliminated the risk or reduced it to an acceptable level, then the supervisor recycles the investigation.

11.2 Recycle

If the implemented solutions have not effectively eliminated the risk or reduced it to an acceptable level, then the investigation is recycled and the necessary rework performed (see Section 8.2 above).

11.3 Close Incident

After verifying and validating the agreed solutions, the responsible supervisor closes the incident in the incident database.

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APPENDIX III NEAR LOSS, EVENT REPORTING, AND INCIDENT INVESTIGATION

GUIDELINES FOR SELECTING INVESTIGATION METHODOLOGY

The Management Sponsor is responsible for ensuring the appropriate investigation methodology (TOP, 5-Why, or TapRooT®) is used to investigate the loss or near loss. The appropriate methodology is based on the loss/near loss classification and/or the potential severity of the consequences, as follows:

1.0 LEVEL 3 LOSSES

Investigate using TapRooT®

***2.0 LEVEL 1-2 LOSSES AND ALL NEAR LOSSES**

For investigation purposes, Level 1 and 2 losses and all near losses are classified according to their reasonable potential consequences. Using the *Global Manufacturing Loss/Near Loss Classification and Reporting Matrices*, the Responsible Supervisor (or designee) estimates the worst consequence that could reasonably have resulted from the loss/near loss in question. Listed below are questions useful in making this determination:

- 2.1 Could the consequences of the loss/near loss just as easily have been at a higher level of severity?
- 2.2 Under slightly different conditions, what is the worst reasonable result that might have occurred?
- 2.3 If existing safeguards (alarms, automatic shutdown mechanisms, etc.) had not been in place, what is the worst reasonable result that might have occurred?
- 2.4 If the situation had not been identified and corrected when it was, what is the worst reasonable result that might have occurred?
- 2.5 What is the worst result that has occurred from similar events or situations in the past?

The Responsible Supervisor (or designee) should consult as necessary with the Management Sponsor, operational staff, technical specialists, and/or HES personnel in making this determination.

When the loss/near loss has been classified according to its reasonable potential consequences, select the investigation methodology using the guidelines shown below.

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3.0 GUIDELINES FOR SELECTING TOP, 5-WHY, OR TAPROOT®

Near Loss, Level 1 and Level 2 investigations typically use the TOP or 5-Why technique, although TapRoot® may be used if desired.

3.1 TapRoot® is required when:

- An incident is classified as a PSM or MCAR near miss.
- The incident is an NSR Consent Decree violation.

3.2 Consider using TOP or TapRoot® when:

- There is a recordable injury or significant first aid.
- The frequency of this type of incident is high, or this is a repeat incident.
- There is a high probability that multiple (three or more) causal factors were involved.
- Safe work practices are involved.
- Multiple (three or more) root causes appear likely.
- It is uncertain that the 5-Why technique will adequately address the incident and identify true root causes.
- The consequences of a Level 2 loss are closer to Level 3 than Level 1.
- The loss is a business loss (financial loss, trading loss, etc.); in this situation, an OE Specialist or the Management Sponsor should be consulted to determine if TOP or TapRoot® is preferred.

3.3 Consider using 5-Why when:

- The loss/near loss is not specific to a particular process (e.g., slip, muscle strain, cut, etc.).
- The complexity of the loss/near loss is obviously low.
- The amount of data required is small and does not require extensive analysis.
- There is a high probability that as few as one or two root causes were involved.
- The sequence of events leading to the incident is short.
- Third-party actions outside of Chevron's control were the primary cause (and, as a consequence, detailed information is not available).

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APPENDIX IV NEAR LOSS, EVENT REPORTING, AND INCIDENT INVESTIGATION

CALIFORNIA OSHA AND RICHMOND INDUSTRIAL SAFETY ORDINANCE REGULATORY REQUIREMENTS

1. California OSHA - Title 8 Safety Orders - Section 5189, Process Safety Management of Acutely Hazardous Material, (m) Incident Investigation

- a. The employer shall establish a written procedure for prompt reporting and investigating every incident which results in or could reasonably have resulted in a major accident.
- b. Incident investigations shall be initiated no later than 48 hours following the incident.
- c. An incident investigation team shall be established and consist of persons knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons who are qualified to thoroughly investigate and analyze the incident.
- d. A written report shall be prepared at the conclusion of the investigation which shall include at a minimum:
 - (1) Date of incident
 - (2) Date investigation began
 - (3) A description of the incident
 - (4) The factors that contributed to the incident, and
 - (5) Any recommendations resulting from the investigation
- e. The report shall be reviewed with all operating, maintenance, and other personnel whose work assignments are within the facility where the incident occurred.
- f. The employer shall establish a system to promptly address and resolve the report findings and recommendations and shall implement the report recommendations in a timely manner, or take action to prevent a reoccurrence.
- g. Incident Investigation reports shall be retained for a minimum of five (5) years.

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APPENDIX IV NEAR LOSS, EVENT REPORTING, AND INCIDENT INVESTIGATION

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2. Richmond Industrial Safety Ordinance Investigation Requirements

Meet all of the requirements of Section 1, above, and:

- a. Perform a Root Cause Analysis (TapRoot®).
- b. Consider human systems as causal factors during the investigation.
- c. Consider what latent conditions (if any) contributed to the event.
- d. Identify the Management System that failed (if applicable).

